



The Monthly Evening Sky Map

A JOURNAL FOR THE AMATEUR — FOUNDED BY THE LATE LEON BARRITT
—NORTHERN AND SOUTHERN HEMISPHERE—

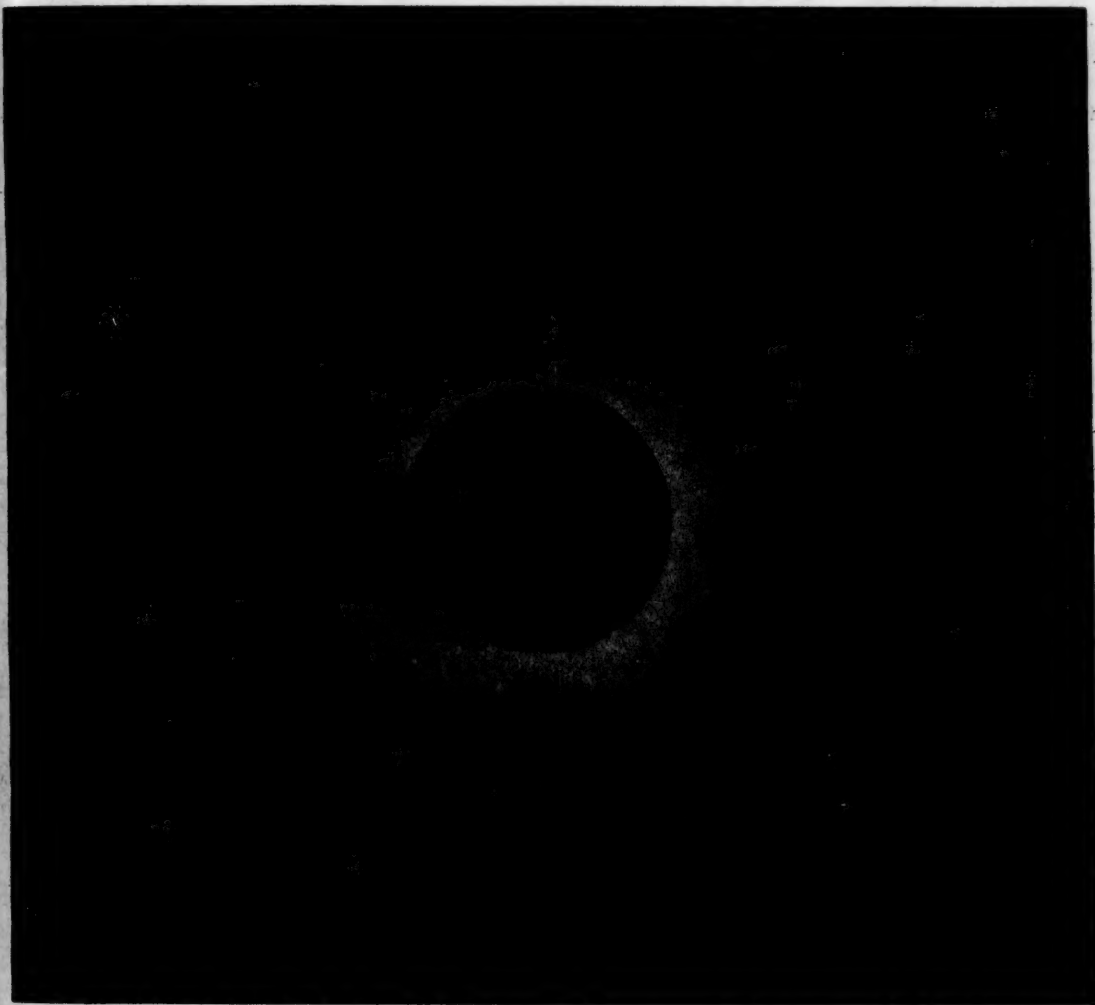
ALSO A STAR, CONSTELLATION AND PLANET FINDER MAP
ARRANGED FOR THE CURRENT MONTHS - APRIL - MAY - JUNE
MORNING AND EVENING - AND PRACTICAL ANYWHERE IN
THE WORLD PUBLISHED QUARTERLY

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This is the first photograph to definitely call attention to the fact that the Sun is surrounded by a globular corona more than a million miles deep, in which the visible corona shines more strongly. Up to this time it was supposed that the corona consisted largely of the flaming coronal streamers alone.

While the globular corona image is easily visible on all the airplane films it was necessary to photograph on Kodalith film the image on the negatives by reflected light. This work was done by the Eastman Kodak Research Laboratories.

This photograph was taken during the June 8th eclipse of the Sun by Major A. W. Stevens, a member of the Hayden Planetarium.

Grace Eclipse Expedition, from a Pan American-Grace airliner at an altitude of 25,000 feet.

Total Eclipse of the Sun

JUNE 30, 1954

CAMBRIDGE, MASS.—The most comprehensive study of a solar eclipse in history will take place on June 30, 1954, it was announced today by the Air Force Cambridge Research Center of the Air Research and Development Command.

In a brief period of two and three-quarter hours, while the shadow of the moon races at 3,000 miles an hour from Nebraska, USA, to Pakistan, experts will work at observation sites, some in extremely remote sections of the world.

Officials from AFCRC and the cooperating agencies have spent a year in making plans to view the eclipse.

Cooperating agencies, who hold contracts from the Air Force to work on eclipse research, include the American Geographic Society, New York City; Georgetown University, Washington, D. C.; Ohio State University, Columbus, Ohio, and the Ernest Norrman Laboratories, Williams Bay, Wisconsin.

While millions watch the total eclipse through smoked glasses and film negatives, scientists at almost unheard-of places like Knob Lake in Ontario and the Okak Islands in Labrador will tend complicated instruments and make hundreds of observations and recordings.

They want this to be the most comprehensive survey of its type in history because there will not be another eclipse that spans North America and Europe until the year 2151.

The most significant observations will concern the measuring of distance between North America and Europe.

Three different methods of measuring long distances, especially across oceans, will be used, according to men in charge of the observations. All are expected to give a much more precise knowledge of the actual distance between points in the United States and Europe.

When the total eclipse starts at sunrise next June 30th, and the scientists spend feverish moments working at assignments that require split-second timing, everything at every site on the path of the eclipse will be in absolute readiness.

Captain Ralph J. Ford, Air Force officer assigned to the Geophysics Research Directorate, AFCRC, is Project Scientist for the eclipse expeditions and observations. He said that the most intensive work at the sites will have to take place during a period of only 3½ minutes, which includes the few moments prior to, during, and after the total eclipse phases.

Plans for this major scientific enterprise started in June, 1953. By September Captain Donald M. Messmore, Jr., of the Air Force Cambridge Research Center, and Russell R. Shorey, geophysicist with the American Geographical Society, were off on a three

month tour of the total eclipse areas to make sure that sites already selected were adequate for geodetic observation purposes.

In addition, they arranged for housing, food supplies and transportation of equipment for the men who will make up the expeditions.

The eclipse will be a huge arc, starting in Nebraska at sunrise, and proceeding through eastern Canada, Labrador, southern Greenland, Iceland, the Faeroes and Shetland Islands, southern Norway and Sweden, Russia, Iran, Afghanistan and Pakistan to its ending at sunset in northern India.

Along this path will be four major sites and eight minor sites, the latter on the edges of the 80 mile wide shadow.

Diplomatic negotiations have assured the expeditions access to all planned sites in foreign nations. It is presumed Soviet scientists will be carrying on their own scientific studies.

Sites for observations include James Bay, Ontario; Knob Lake, Quebec; the Okak Islands, off north east Labrador; Greenland; the Faeroes Islands; Shetland Islands; Norway; Sweden; Iran, and "satellite" stations near the outer edges of the paths of the eclipse.

American scientists will be responsible for observations at all places except the Scandinavian countries. In Norway and Sweden, only a few U.S. observers will be present, and actual operations will be conducted by Finnish and Swedish scientists.

Dr. W. A. Heiskanen, director of the Ohio State University Institute of Geodesy, Photogrammetry and Cartography, will supervise the Bonsdorff and Lindblad methods of observation, two of the three types to be used.

He will be assisted by Dr. T. J. Kukkamaki, internationally known Finnish geodesist, and Dr. J. Allen Hynek, professor of Astronomy at the Ohio State University.

Dr. Kukkamaki will be in charge of work at a post in Greenland, and Dr. Hynek will head the Ohio State party that goes to Iran. Hynek already has visited Europe and conferred with Swedish and Finnish scientists on technical data and standardization of equipment.

From Georgetown University, Dr. Francis J. Heyden, S. J., will conduct work with the Gaviola observation method, which he used on an eclipse expedition in Africa in 1952. In addition he will have overall charge of the eclipse station in Iran.

The three methods of observation—Bonsdorff, Lindblad and Gaviola—named for the scientists who developed them, will be employed for the first time simultaneously at four major sites, James Bay, Knob Lake, the Okak Islands, and Iran.

Use of highly sensitive photographic and photoelectric equipment is involved in all three methods.

EVENING SKY MAP FOR APRIL



Face South And Hold The Map Overhead. The Top North And You Will See The Stars And Planets Just As They Appear In The Heavens. The Arrow Through The Two Stars In The Bowl Of The Big Dipper Points To The North Star. The Star At The End Of The Little Dipper.

AT 9:00 P.M., APRIL 1 8:00 P.M., APRIL 15 7:00 P.M., APRIL 30

This map is arranged specifically for Latitude 40 North—New York—but is practical for ten or fifteen degrees north or south of this latitude anywhere in the United States, the southern portion of Canada and the northern portion of Mexico and for corresponding latitude in Europe.

The Bonsdorff method directly photographs crescents of the sun as the moon passes between it and the earth; the Lindblad method, also employing photography, shows the flash or reversed spectrum as the moon passes. The Gaviola method measures the decreasing light intensity as the moon shuts out the sun.

Because the speed of the moon's shadow, and the precise time of its location are known, distances can be computed accurately through the use of the three methods.

Scientists feel that a true comparison of the relative accuracy of the three techniques will result from the June 30th studies.

Most of the scientists from the Air Force and cooperating agencies will leave in late May or early June for the observation posts that range from sub-arctic to sub-tropical areas across the span of the eclipse.

The Air Force Research Center, sponsoring agency for the eclipse observation teams, is a major center of the Air Research and Development Command. The Geophysics Research Directorate of AFRC has been responsible for much of the work and planning for the expeditions.

PUBLIC INFORMATION OFFICE

UN 4-4720, Ext. 150, 152

Lt. Douglas E. Ashford

Mr. George D. Wood, Jr.

EDITORS NOTE: A Press Conference on the eclipse expeditions has been tentatively planned for New York City about March 22. Key scientists and Air Force personnel will be present to explain details of the expeditions. Notice of time and place coming at a later date. In the meantime, please address all queries to this office.

THE PUBLISHER OF THE MONTHLY EVENING SKY MAP will appreciate the kindly interest of its subscribers in sending the names of those whom they think to be interested in the study of the "STARS". We will take pleasure in sending them sample copies.

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MRS. LEON BARRITT, Editor
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Irving L. Meyer
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 Box 3, Pike County, Shohola, Pa.
 Telephone Milford 2310

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AMATEUR'S FORUM

April 1954

By IRVING L. MEYER, M. S.

THE SUN: is in the northern hemisphere, and moves from Pisces into Aries. Distance the 1st is 92.8 million miles, and the 30th is 92.6 million miles.

THE MOON: is closest to the earth on the 3rd at 222,000 miles, and is farthest from the earth the 17th at 253,000 miles.

The Moon's Phases (E.S.T.):

New Moon	April 3 at 7:25 A.M.
First Quarter	10 at 12:05 A.M.
Full Moon	18 at 12:48 A.M.
Last Quarter	25 at 11:57 P.M.

MERCURY: at the beginning of the month can be seen in the morning sky twilight, low in the east. Though best observed from the southern hemisphere (as are all Mercury's best elongations), this planet will be bright enough to be readily detectable by a keen-eyed observer. Magnitude will be about 0.4, apparent diameter 7", and in the telescope it will appear gibbous (60% illuminated as seen from earth). It moves from Aquarius through Pisces to the Aries boundary, and its geocentric distance increases from 88 million miles the 1st to 121 million miles the 30th.

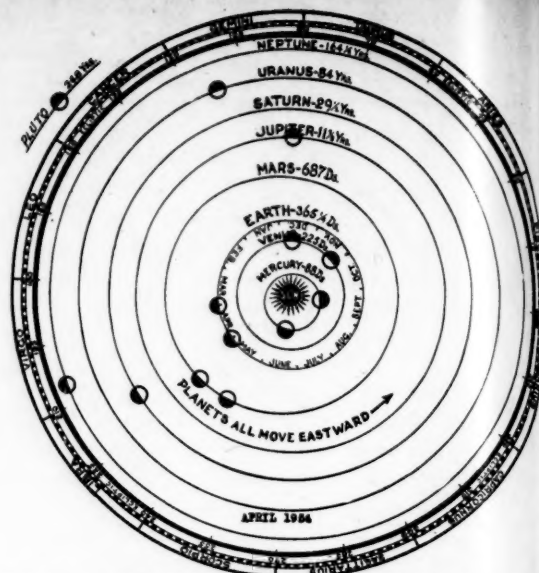
VENUS: can now be observed easily in the evening sky, as it moves from Pisces through Aries, to a point close to the Pleiades in Taurus. Magnitude is -3.3 the entire month, making this planet by far the brightest star-like object in the heavens. Its apparent diameter of 10" makes its gibbous disc readily detectable in even small telescopes. Distance the 1st is 152 million miles, and the 30th is 143 million miles.

MARS: travels from Ophiuchus into Scorpio in the morning sky. It is coming closer to the earth, with consequent increases in brightness (magnitude 0.1 the 1st to -0.7 the 30th) and apparent diameter (10" the 1st to 13" the 30th). Though Mars' orbit is entirely more distant from the Sun than the earth's, there are occasions when this planet's disc will not appear perfectly round, such as at the beginning of this month, when at 89% illuminated, the disc will appear distinctly gibbous in the telescope. Distance the 1st is 89 million miles, and the 30th is 66 million miles. Mars rises well before midnight this month.

JUPITER: in Taurus, high in the northern heavens, is gradually slipping from the evening scene. It sets at just about the time Mars rises. It is still a bright object, and even opera glasses will permit detection of its four brightest satellites. Distance the 15th is 520 million miles.

SATURN: in Virgo, comes to opposition the 26th, and is very well placed for observation. On that date it is closest to the earth (at 818 million miles distance) and is an amazing object in the telescope. Its apparent diameters are as follows: ring system, 42.6"; equatorial diameter of the planet itself, 19.0"; polar diameter 16.9". Magnitude is 0.4. The northern side of the ring system is opened about 17° toward the earth. These figures mean that even with moderate magnification (50 diameters and up) the ring system will be readily observable, as well as the polar flattening of the planet, cloud belts on the disc, etc. One or more of the brighter satellites will be visible in even small telescopes.

URANUS: in Gemini, sets around midnight. It is well placed for observation, but at magnitude 6, is a relatively insignificant object. Moderate telescopic power will reveal its small, round disc. Distance the 15th is 1742 million miles.



Orbits and Heliocentric Movements of the Planets for April

NOTE: The planets are shown in their respective orbits. Two positions, one for the first, and one for the last day of the month, are given for Mercury, Venus and Mars. The arrow indicates the last day of the month, Jupiter, Saturn, Uranus and Neptune are shown in the mean position for the current month.

NEPTUNE: just north of Spica in Virgo, comes to opposition the 15th. On that date magnitude is 7.7, and minimum geocentric distance (2723 million miles) gives this remote giant an apparent diameter of 2½". This planet is not visible to the naked eye, and requires pretty fair magnification to reveal its tiny disc. Well placed for observation all month.

PLANETARY CONFIGURATIONS

Eastern Standard Time
APRIL 1954

April 1—1:27 PM	Conjunction, Mercury and Moon; Mercury south 6° 38'
April 4—1:28 PM	Conjunction, Venus and Moon; Venus south 5° 52'
April 5—2:00 AM	Mars in descending node
April 7—9:34 PM	Conjunction, Jupiter and Moon; Jupiter south 2° 33'
April 9—6:00 AM	Quadrature, Uranus and Sun
April 9—10:53 PM	Conjunction, Uranus and Moon; Uranus north 0° 28'
April 15—12:00 AM	Opposition, Neptune and Sun
April 17—11:58 PM	Conjunction, Neptune and Moon; Neptune north 7° 11'
April 19—12:01 AM	Conjunction, Saturn and Moon; Saturn north 7° 48'
April 19—6:00 AM	Venus in ascending node
April 19—5:00 PM	Mercury greatest heliocentric latitude south
April 23—12:20 PM	Conjunction, Mars and Moon; Mars north 0° 36'
April 26—3:00 PM	Opposition, Saturn and Sun

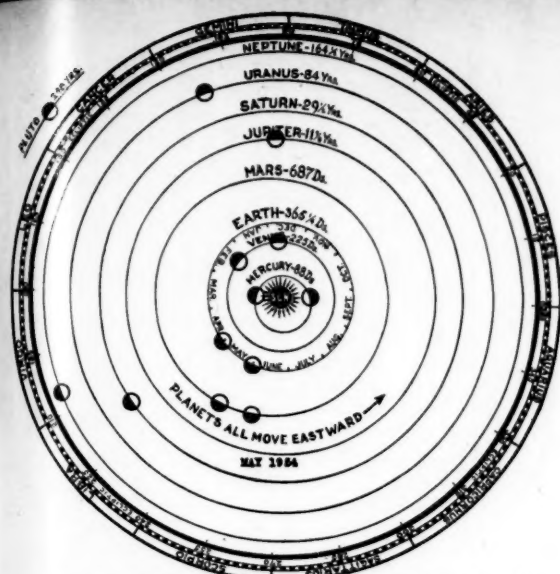
SPRING

The Nautical Almanac would have it that because the Sun enters Aries Spring begins and continues thereafter until the Summer solstice on June 21. That is actually not so, however correct it may seem to the Astronomer.

Spring begins for any man the moment he aimlessly shuffles the papers on his desk, yawns, wonders if he could not start life all over again and lets his fancy dwell on the possibility of being an explorer, a farmer or a pirate.

Spring ends for that same man when he willingly returns his nose to the not too harsh grindstone.

Fortunately for the material needs of man, it is the briefest, most fragile and most perishable of seasons.



Orbits and Heliocentric Movements of the Planets for May

PLANETARY CONFIGURATIONS

Eastern Standard Time

MAY 1954

May 2—	6:21 AM	Conjunction, Mercury and Moon;
		Mercury south 6° 13'
May 4—	7:51 AM	Conjunction, Venus and Moon;
		Venus south 2° 36'
May 5—	3:10 PM	Conjunction, Jupiter and Moon;
		Jupiter south 1° 54'
May 7—	8:04 AM	Conjunction, Uranus and Moon;
		Uranus north 0° 46'
May 8—	6: PM	Mercury in ascending node
May 8—	6: PM	Superior conjunction, Mercury and Sun
May 13—	9: AM	Mercury in perihelion
May 15—	4:48 AM	Conjunction, Neptune and Moon;
		Neptune north 7° 16'
May 16—	2:17 AM	Conjunction, Saturn and Moon;
		Saturn north 7° 53'
May 21—	3:22 AM	Conjunction, Mars and Moon; Mars
		south 1° 24'
May 22—	11: PM	Venus in perihelion
May 23—	7: AM	Conjunction, Venus and Jupiter;
		Venus north 1° 30'
May 23—	3: PM	Mercury greatest heliocentric latitude north
May 23—	4: PM	Mars stationary in Right Ascension
May 31—	2: PM	Conjunction, Mercury and Jupiter;
		Mercury north 2° 14'

AMATEUR'S FORUM

By IRVING L. MEYER, M. S.

MAY 1954

THE SUN: in the northern hemisphere, moves from Aries into Taurus. Distance the 1st is 93;6 million miles, and the 31st is 94.2 million miles.

THE MOON: is at perigee (closest to the earth) twice this month; on the 2nd at a distance of 222,000 miles and on the 30th at 224,000 miles. Apogee (farthest from the earth) falls on the 14th, at a distance of 252,000 miles.

The Moon's Phases (E.S.T.):

New Moon	May 2 at 3:22 P.M.
First Quarter	9 at 1:17 P.M.
Full Moon	17 at 4:47 P.M.
Last Quarter	25 at 8:49 A.M.
New Moon	31 at 11:03 P.M.

MERCURY: races from Aries through Taurus to the western edge of Gemini. It is in the morning sky until superior conjunction with the Sun on the 8th, after which it will be in the evening sky. However, it is too close to the Sun all month for satisfactory observation. Maximum geocentric distance, the 7th, is 123 million miles.

VENUS: moving from Taurus into Gemini in the evening sky, is well placed for observation. Geocentric distance decreases during the month 143 to 129 million miles, with consequent increase in apparent diameter from 11" to 12". It is still very remote, relatively, although a brilliant object to the unaided eye.

MARS: is well placed in Sagittarius, where it commences retrograde motion this month. It rises shortly after dusk, and glows as a reddish star. Distance the 1st is 73 million miles, diameter is 13.4", and magnitude is -0.7. On the 31st, distance is 54 million miles, diameter is 18.4", and magnitude is -1.6, making it somewhat brighter than Jupiter, and second only to Venus in order of brightness among the star-like objects in the heavens.

JUPITER: is fading from the evening scene, as it sets shortly after sunset. In Taurus, close to the Gemini boundary, it is 1½° south of Venus on the 23rd, and 2¼° south of Mercury on the 31st. Distance the 15th is 553 million miles.

SATURN: in Virgo in the evening sky, is just past opposition, and accordingly is well placed for observation. Telescope-users will be able to detect the ring system with the smallest instruments, and a six-inch reflector will show up several of Saturn's many moons. On the 15th, distance is 823 million miles, equatorial diameter 18¼", ring diameter 42", and magnitude 0.4.

URANUS: in Gemini, is a sixth-magnitude object, and too close to the Sun for satisfactory observation, although it can be picked up easily with optical aid, in the early evening sky. Distance the 15th is 1786 million miles.

NEPTUNE: in Virgo, is close to Spica, and well placed for observation. At magnitude 8, it cannot be seen with the unaided eye. Distance the 15th is 2734 million miles.

MAY EVENING SKIES

The Stars and Constellations

Orion and his great cortege of brilliant constellations have now virtually disappeared from the evening sky, and the summer constellations are beginning to take their places. The whole length of the enormous Hydra can now be seen, stretching across the southern sky, starting with the diamond-shaped head under the Beehive cluster in Cancer, and running under Leo, Crater, Corvus and Virgo, nearly to the eastern horizon. His brightest star, the lone Alphard, exhibits a reddish color. Below the central and fore parts of his elongated body may be seen some of the stars in the rigging of the ship Argo, and below his tail some of the stars of Centaurus.

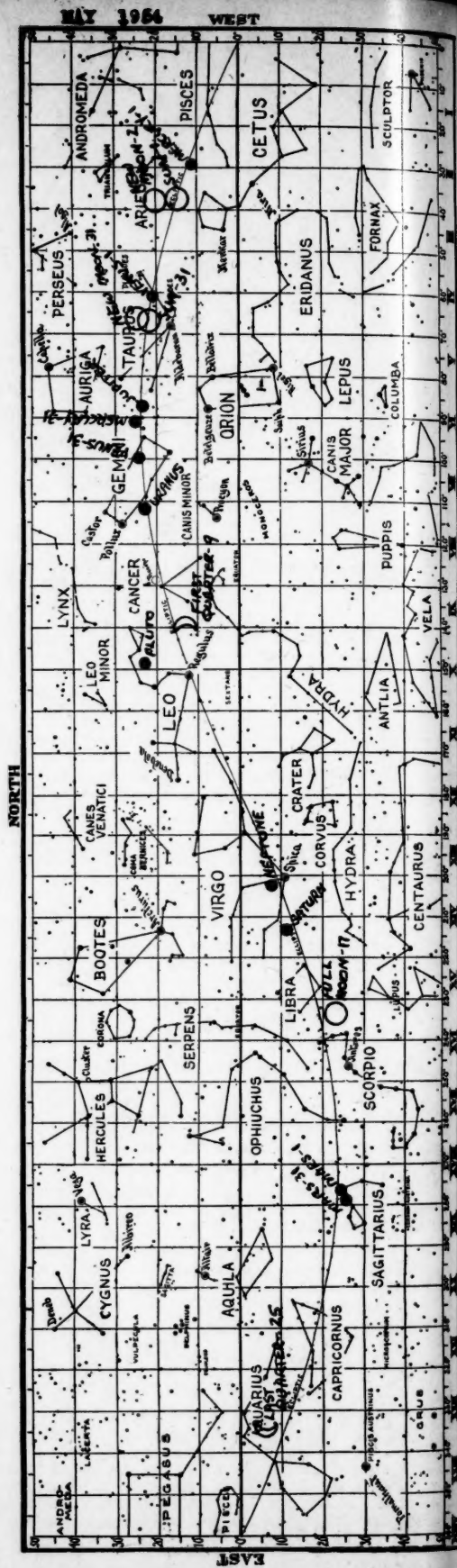
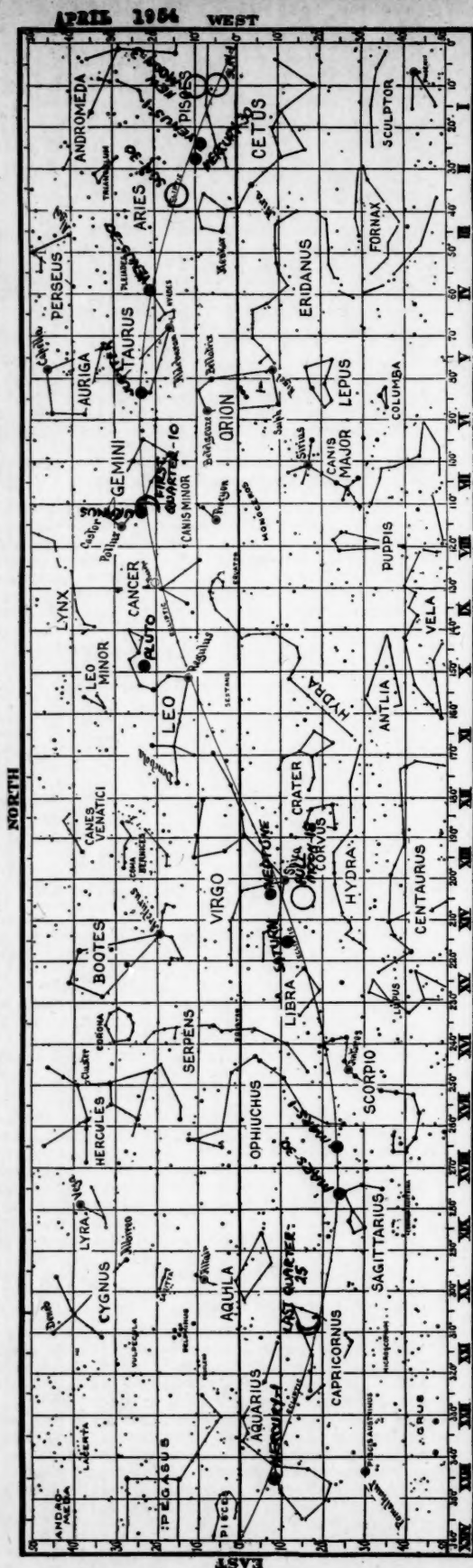
Virgo is very conspicuous in the southeast, especially on account of the beauty of its chief star, the pure white Spica. The situation of the celebrated binary, Gamma Virginis, is indicated on the chart. This is well worth looking at with a telescope. The two stars composing it are each of about the third magnitude, and their distance apart is a little less than six seconds of arc. They revolve about their common center of gravity in a little less than 200 years. A 3-inch telescope shows them beautifully.

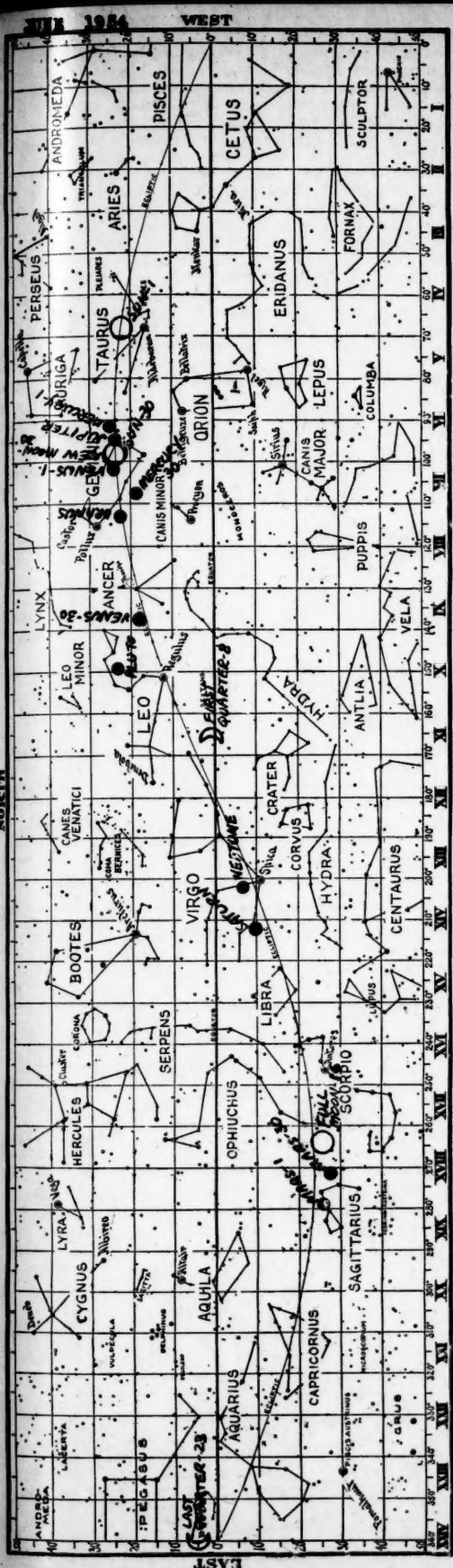
Above Virgo the glimmering cluster in Coma Berenices is conspicuous, and east of it glows great Arcturus, one of the most brilliant of the fixed stars, and the brightest in the Constellation Bootes, the Bear-Driver, who seems to be pursuing the Great Bear, Ursa Major (the Great Dipper), around the pole. Everybody must sympathize with the exclamation of Carlyle about the delight of watching "Bootes driving his hunting dogs across the zenith in their leash of sidereal fire." The dogs are represented by the little constellations of Canes Venatici, under the handle of the Great Dipper, which is now almost overhead north of the zenith.

Among other constellations particularly beautiful at the present time is Corona Borealis, which may be seen, with its almost perfect circle of stars, northeast of Arcturus. Away over in the northeast Lyra is seen rising with the glittering Vega, which is as bright as Arcturus, but strikingly different in color, its rays being blue-white while Arcturus is orange, or at times almost red. Both of these stars are immense actual magnitude, Arcturus probably exceeding our Sun at least 1,000 times in brightness while Vega is hardly less enormous. But Vega is apparently young in order of evolution, and Arcturus is old, older than the Sun.

A MERCATOR PROJECTION OF THE STAR FIELD FOR 50 DEGREES NORTH AND 65 SOUTH OF THE EQUATOR

The Star Field makes an apparent complete revolution westward every 24 hours, hence the hourly division from I to XXIV, but this has no relation to the time that any portion of the map is in view. Practical as a Star, Constellation and Planet Finder for the current months—April-May-June, 1954—Anywhere in the world. Showing also the position of the Sun at the beginning and ending of the month and the position of the Moon at it's several phases.





Nov. 5 Oct. 22 Oct. 5 Sept. 20 Sept. 5 Aug. 20 Aug. 5 July 20 June 20 June 5 May 20 May 5 Apr. 20 Apr. 5 Mar. 20 Mar. 5 Feb. 18 Feb. 5 Jan. 20 Jan. 5 Dec. 20 Dec. 5 Nov. 20

THE DATE BELOW EACH NUMERAL WILL SHOW WHEN THAT SECTION OF THE MAP WILL BE ON THE MERIDIAN—DUE SOUTH—AT 9 P.M. OR AN HOUR EARLIER FOR EACH NUMERAL WEST OF THIS DATE AND AN HOUR LATER FOR EACH NUMERAL EAST.

JUNE EVENING SKIES

The Stars and Constellations

The most beautiful constellation in the Southern part of the sky in the June evenings are Leo, Corvus and Virgo. The "Sickle" of Leo is seen west of the meridian, then much lower in the South appears the striking quadrilateral of Corvus, and directly South, at a convenient elevation for observation, is Virgo with the brilliant Spica, its brightest star, glowing like a Diamond of the purest brilliancy.

Spica which appears as a single star in the most powerful telescopes is nevertheless a double, belonging to the class known as "Spectroscopic binaries," because the companion is dark and its presence is revealed only by the shifting lines in the spectrum, the motion of the lines being caused by the alternate approach and recession of the bright star as it swings around and round with its invisible companion. But the ordinary spectator, having no telescope and no spectroscope at command, will nevertheless be interested in the extreme beauty of "Spica," a scintillating point of purest white light. Its brilliancy combined with its great distance proves that it is one of the most powerful radiant bodies in the universe.

Over in the Southeast appears one of the most remarkable of the constellations, Scorpio, marked by the presence of a brilliant red star of the first magnitude—Antares. This also is a double, which may be separated with a telescope of four inches aperture. The small companion star is of a rich green color, contrasting beautifully with the red hue of its greater neighbor. But it can be better seen in July when it is nearer the meridian, and farther removed from the mists and the unsteady air of the horizon.

High overhead, following the handle of the Great Dipper, is the splendid constellation Boötes, represented in some of the old pictured charts of the heavens, in the form of a tall man holding by a leash a pair of hunting dogs, and apparently chasing Urs-a Major (the Great Bear) around the pole. For this reason "Boötes" is often called the "Bear Driver". The brightest star in the constellation, and one of the brightest in the entire sky, is Arcturus. The reader should notice the huge triangle whose corners are marked by Arcturus, Spica and Denebola (or Beta Leonis), in Leo. The distance between Spica and Arcturus is somewhat more than 30 degrees.

East of Boötes shines the circle of the Northern Crown (Corona Borealis), and in the Northeast, with resplendent rays, glitters the beautiful Vega in the constellation Lyra. The Great Dipper is high overhead with handle to the East, and Cassiopeia is low upon the horizon in the north.

AMATEUR'S FORUM

By IRVING L. MEYER, M. S.
JUNE 1954

THE SUN: reaches its highest point in the northern heavens on the 21st. During the month it moves from Taurus into Gemini, at gradually increasing distance from the earth (from 94.2 million miles the 1st to 94.4 million miles the 30th).

There is a total eclipse of the sun on the 33th. The path of totality runs north central United States, across Lake Superior, north-east Canada, the southern tip of Greenland, southern Norway and Sweden, and Russia and China. As a partial, this eclipse will be visible over most of North America, the north Atlantic Ocean, northern Africa, all of Europe, and all but the extreme eastern part of Asia. Minneapolis will see a total eclipse with a duration of about 72 seconds.

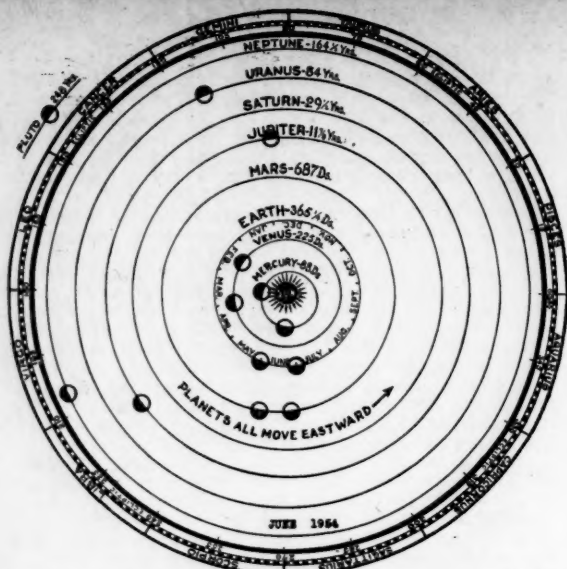
THE MOON: is at apogee the 11th at 252,000 miles, and is at perigee the 27th at 227,000 miles.

The Moon's phases (E.S.T.):

First Quarter	June 8 at 4:13 A.M.
Full Moon	16 at 7:06 A.M.
Last Quarter	23 at 2:46 P.M.
New Moon	30 at 7:26 A.M.

MERCURY: is an evening sky object in Gemini all month. On the 9th it reaches greatest elongation east of the Sun, 24° 1', and for a few days around this date will be visible low in the west as the sky gets dark. On this date Mercury is 38% illuminated, so as seen in the telescope it would appear crescent-shaped. Diameter then is 8", and magnitude 0.7. Distance the 1st is 91 million miles, and the 30th is 53 million miles.

VENUS: travels from Gemini into Cancer, to a point close to the Leo boundary. Venus is gradually approaching the earth (129 million miles the 1st to 111 million miles the 30th), and will appear brighter and subtend a larger apparent diameter later in the summer. This month the planet appears gibbous in the telescope, and averages magnitude -3.4. Well placed for observation in the evening sky.



Orbits and Heliocentric Movements of the Planets for June

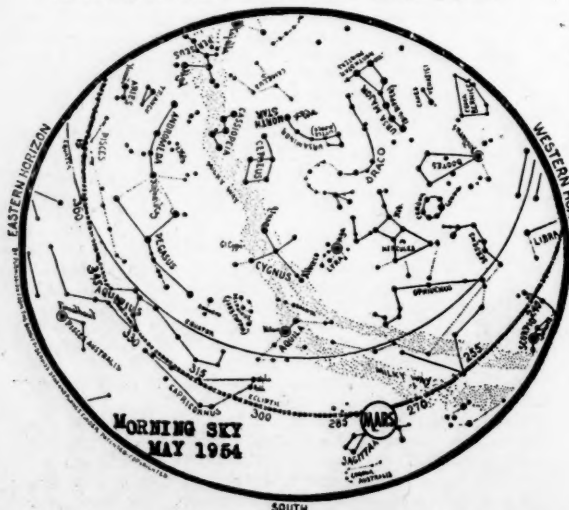
PLANETARY CONFIGURATIONS

Eastern Standard Time

JUNE 1954

June 2—11:11 AM	Conjunction, Jupiter and Moon;
	Jupiter south 1° 15'
June 2—3:21 PM	Conjunction, Mercury and Moon;
	Mercury north 1° 6'
June 3—6:05 AM	Conjunction, Venus and Moon;
	Venus north 1° 32'
June 3—7:47 PM	Conjunction, Uranus and Moon;
	Uranus north 1° 2'
June 6—2: AM	Mercury greatest elongation east,
	24° 1'
June 9—11:00 PM	Conjunction, Venus and Uranus; Ve-
	nus north 1° 23'
June 11—10:43 AM	Conjunction, Neptune and Moon;
	Neptune north 7° 23'
June 12—6:13 AM	Conjunction, Saturn and Moon;
	Saturn north 7° 57'
June 13—6: PM	Venus greatest heliocentric lati-
	tude north
June 16—2: AM	Mercury in descending node
June 17—2:31 AM	Conjunction, Mars and Moon; Mars
	south 2° 56'
June 21—5:55 PM	Sun enters Cancer; Solstice
June 22—9: AM	Mercury stationary in Right Ascen-
	sion

MORNING SKY FOR MAY AND JUNE



MARS: in Sagittarius, comes to opposition the 24th, although the closest approach to the earth does not take place until early in July. Well placed for observation, particularly from the southern hemisphere, it is above the horizon all night. This is one of the most favorable Martian oppositions; by the end of the month distance is 30.1 million miles, apparent diameter 21.9", and magnitude -2.1. Telescope users (preferably with magnification of 100 diameters and up) will be able to detect the surface markings easily, and also one or perhaps both polar caps, as the inclination of Mars' pole to the earth is close to zero. **JUPITER:** in Gemini, is too close to the Sun all month to be observable. It is in conjunction with the Sun on the 30th. Distance the 15th is 572 million miles.

SATURN: in Virgo is well placed for observation in the evening sky. A bright (1st magnitude) object, it is one of the most amazing of telescopic objects, considering its unique ring system. Distance the 15th is 849 million miles.

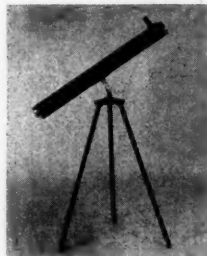
URANUS: in the evening sky in Gemini, is too close to the Sun all month for satisfactory observation. Distance the 15th is 1818 million miles.

NEPTUNE: in Virgo, not far from Saturn, is well placed for observation, but is too faint to be seen with the unaided eye. At magnitude 8 it will show a neat, round disc when seen under 100 diameters on a sizeable telescope. Distance the 15th is 2768 million miles.

SKY-SCOPE

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The full 3½" diameter reflecting type, Astronomical telescope that is sweeping the country. Shows Moon craters, Saturn's Ring, Jupiter's 4 moons and close "double stars" with guaranteed observatory clearness.

It has a tested ¼-wave aluminized mirror, 60 power Ramsden type eyepiece and is equatorially mounted on an all-metal stand.

We invite your attention to our free and straight forward descriptive brochure which also shows photographs of the individual parts used.

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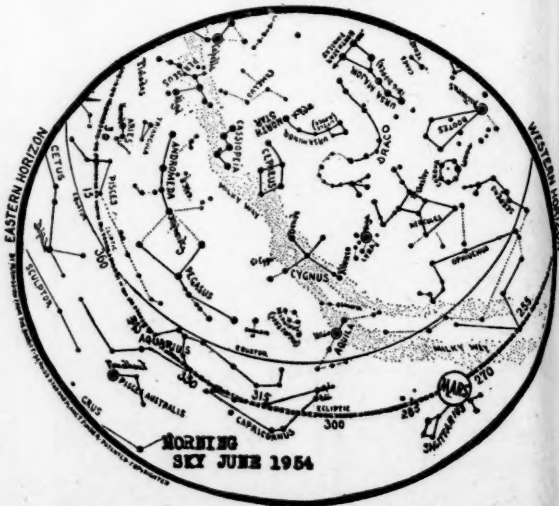
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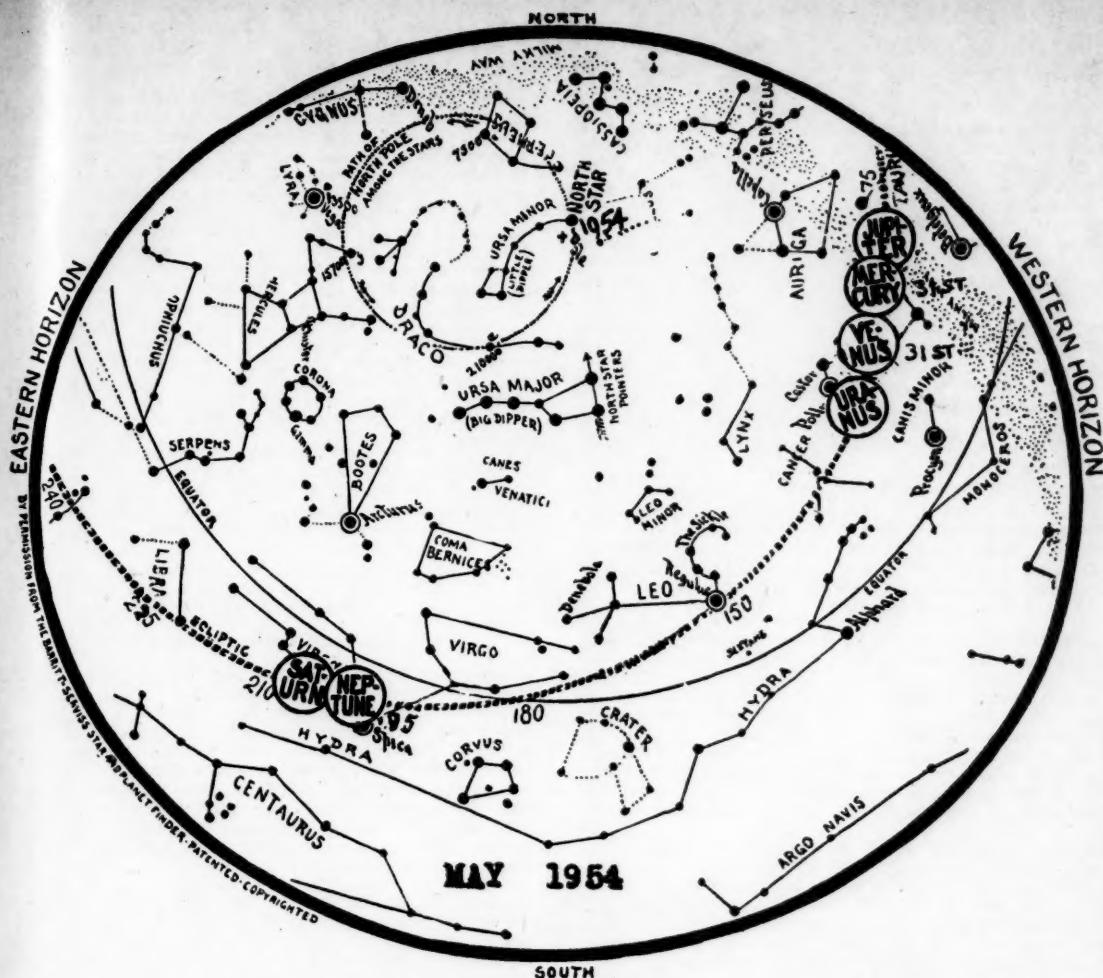
BROOKLYN 28, N. Y.

Planetary Configurations (Con'td.)

June 24—12: PM	Opposition, Mars and Sun
June 26—9: AM	Mercury in aphelion
June 30—	Total eclipse of the Sun
June 30—7:38 AM	Conjunction, Jupiter and Moon;
	Jupiter south 0° 38'
June 30—1: PM	Conjunction, Jupiter and Sun
June 30—9:07 PM	Conjunction, Mercury and Moon;
	Mercury south 3° 41'



At 4:30 A.M., May 1; 3:30 A.M., May 15; 2:30 A.M., May 31 At 4:00 A.M., June 1; 3:00 A.M., June 15; 2:00 A.M., June 30

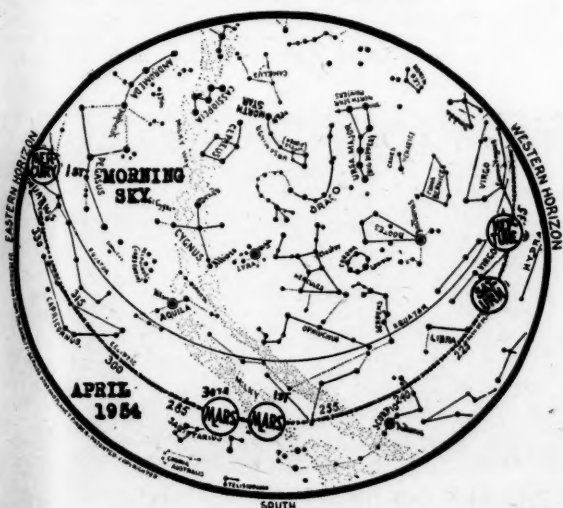


AT 9:15 P.M., MAY 1; 8:30 P.M., MAY 10; 7:45 P.M., MAY 21;

This map is arranged specifically for Latitude 40 North—New York—but is practical for ten or fifteen degrees north or south of this latitude anywhere in the United States, the southern portion of Canada and the northern portion of Mexico and for corresponding latitude in Europe.

MORNING SKY MAP FOR APRIL

EVENING SKY FOR SOUTHERN HEMISPHERE



PALAMAR OBSERVATORY

THE PALOMAR OBSERVATORY is owned by the California Institute of Technology, a privately endowed educational and research institution located in Pasadena, California. The Observatory is operated jointly with the Mount Wilson Observatory of the Carnegie Institution of Washington. Available at these cooperating observatories are the world's two largest telescopes, the 200-inch Hale at Palomar and the 100-inch Hooker at Mount Wilson and the largest Schmidt type camera, the 48-inch at Palomar. These and many smaller instruments are used every clear night by the professional astronomers on the staff of the Observatories for the measurement of positions, distances, temperatures, and chemical compositions of stars, nebulae and other objects.

The funds for building the Palomar Observatory were given to the California Institute by three Rockefeller organizations, the International and General Education Boards and the Rockefeller Foundation. The total cost of the Palomar project was \$6,550,000 and includes an Astrophysics Laboratory, Optical Shop and Machine Shop on the campus in Pasadena as well as facilities on Palomar Mountain.

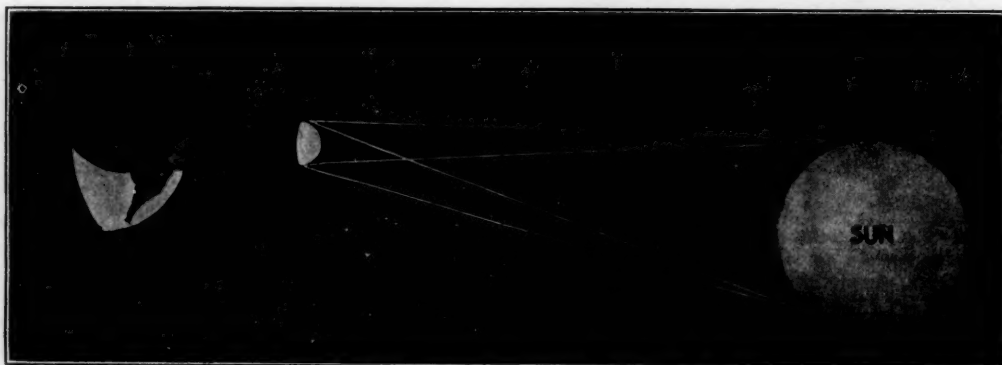
THE MOUNTAIN: Palomar Mountain was chosen for the observatory because it offers ideal climatic conditions for astronomical work, is far enough from any city to avoid interference from city lights, and is easily accessible by a paved highway built by San Diego County in which the observatory is located. The site of the dome is approximately 5,600 feet above sea level.

THE HALE 200-INCH TELESCOPE: The Hale Telescope is actually a giant camera with which astronomers take pictures of objects up to a billion light years away (1 light year equals about 6 trillion miles). This is twice as far as any other telescope has ever been able to penetrate space. At the dedication of the observatory on June 3, 1948 the telescope was named in honor of Dr. George Ellery Hale, who was not only the founder and first director of the Mount Wilson Observatory, but conceived and did much of the planning of the Palomar Observatory.

The most important single part of the telescope is its 200-inch mirror. This huge piece of pyrex glass, the largest ever cast, was completed by the Corning Glass Works in 1935. From 1936 to late 1947 it was ground and polished in the Optical Shop at the California Institute. It weighed 20 tons when cast and 14½ tons when finished. The mirror is approximately 24 inches thick at the edge and 20¼ inches in the center. Its face is covered with a thin coat of aluminum which gives it its reflecting surface.

The total weight of the Hale Telescope is 530 tons, yet it is so delicately designed and balanced that it is moved with a 1-12 horsepower electric motor when following a star across the sky.

In addition to the 200-inch mirror the Hale has six smaller mirrors which, combined with the 200-inch, provide three focal lengths; the prime of 55 feet, the cassegrain of 267 feet and the coude of 500 feet. The prime focus is in the 6-foot cylindrical cage in the upper end of the tube. Here the astronomer rides in the telescope as it moves.



HOW AN ECLIPSE OF THE SUN OCCURS

Page Ten

THE 200-INCH DOME: The dome for the 200-inch is 137 feet wide and 135 feet high (approximately 12 stories). The upper portion revolves on a circular track and has a shutter which can be opened for observing.

THE OTHER INSTRUMENTS: The observatory has two Schmidt cameras, one with an 18-inch and the other a 48-inch aperture. The former has been in operation since 1937 and the 48-inch went into operation early in 1949. Schmidts are wide-angle cameras which take sharp photographs of a large area of the sky on each plate. For the first four years the 48-inch Schmidt will be used to map the entire sky as seen in the northern hemisphere. Pictures taken by the telescopes will be brought for analysis to the California Institute and Mount Wilson laboratories in Pasadena. It is there, and not on the mountain, that any new discoveries will be made.

VISITORS: Although the Observatory is privately owned, the visitor's gallery in the dome of the 200-inch Hale Telescope and the exhibit hall just inside the Observatory grounds are open to visitors without charge every day of the week from 9:30 A.M. to 4:30 P.M.

Because the Palomar instruments are designed to take photographs for scientific research they are not available for visual observation by visitors. It is suggested that persons interested in this type of educational facility visit the Griffith Observatory in Los Angeles.

MAY EVENING SKIES

(Continued from Page 5)

Between Corona Borealis and Vega appears the Constellation Hercules, forever memorable from Sir William Herschel's discovery that it lies ahead of us in the path which the Solar System is pursuing straight toward the north, at the rate of more than 300,000,000 miles per year. Later studies have shown that the real direction of this vast flight is rather nearer to Vega than to the central part of Hercules. There is a good deal of mystery about the origin of the Constellation Hercules. Among the ancient Greeks it was called "The Phantom" and "The Man Upon His Knees."

Leo, in mid-heaven, is well placed for observation, the figure of the Sickle is clearly marked and the leading star Regulus, at the lower end of the handle, is not only bright but is important, being one of the "nautical stars" employed by sailors in finding their longitude at sea.

There is a well-known meteor shower in May, known as the Aquarids, because they radiate from the Constellation Aquarius. As that constellation does not rise before midnight these meteors, if any are seen in the evening, will appear shooting up from the horizon in the northeast. They are visible from the 1st to the 6th of the month. They move swiftly, making streaks in the sky, which usually vanish almost instantly. Bolides, or fireballs, not belonging to any meteor shower may make their appearance at any time. A most wonderful one was seen in England on the evening of February 22nd last. It left a glowing trail which remained visible more than two hours.

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SPRINGFIELD MOUNTING

A fixed eyepiece mounting Springfield Type. 12" Cassegrain telescope balanced at the Declination axis in 3" ball bearings.

Polar axis also in ball bearings and poised by a "pendulum" counterweight.

16" aluminum disk circles graduated to single minutes for R.A. and S.T. and 15' of arc for Dec.

Double focussing—both by secondary mirror and at eyepiece.

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15" bronze worm gears of 24 pitch 360 teeth stainless steel worms. Exposed steel parts plated against moisture.

Sidereal Clock attached near the observer's chair (below the fixed eyepiece).

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The **HAINES ELECTRIC SIDERAL CLOCKS** are made to accommodate those frequencies and by means of special gearing to convert from Standard Time to Sidereal Time, that is to say, from keeping the time of the Sun to keeping the time of the stars.

Astronomers have two sources of data from which to compute Local Sidereal Time, The American Ephemeris, published at Washington (\$3.75) Superintendent of Documents and The Observer's Handbook a small volume published by the Royal Astronomical Society of Canada, 3 Willcocks St., Toronto, 60 cents. Greenwich Sidereal Time in the Ephemeris pages 2 to 16 and in the Handbook on page 7.

Local Sidereal Time which is required in the observatory can be computed from two formulas published in advertising in The Monthly Evening Sky Map and the Observer's Handbook or will be sent to any address upon request and with an example worked out for that location free of charge. Information in the method of using Sidereal Time will also be sent free.

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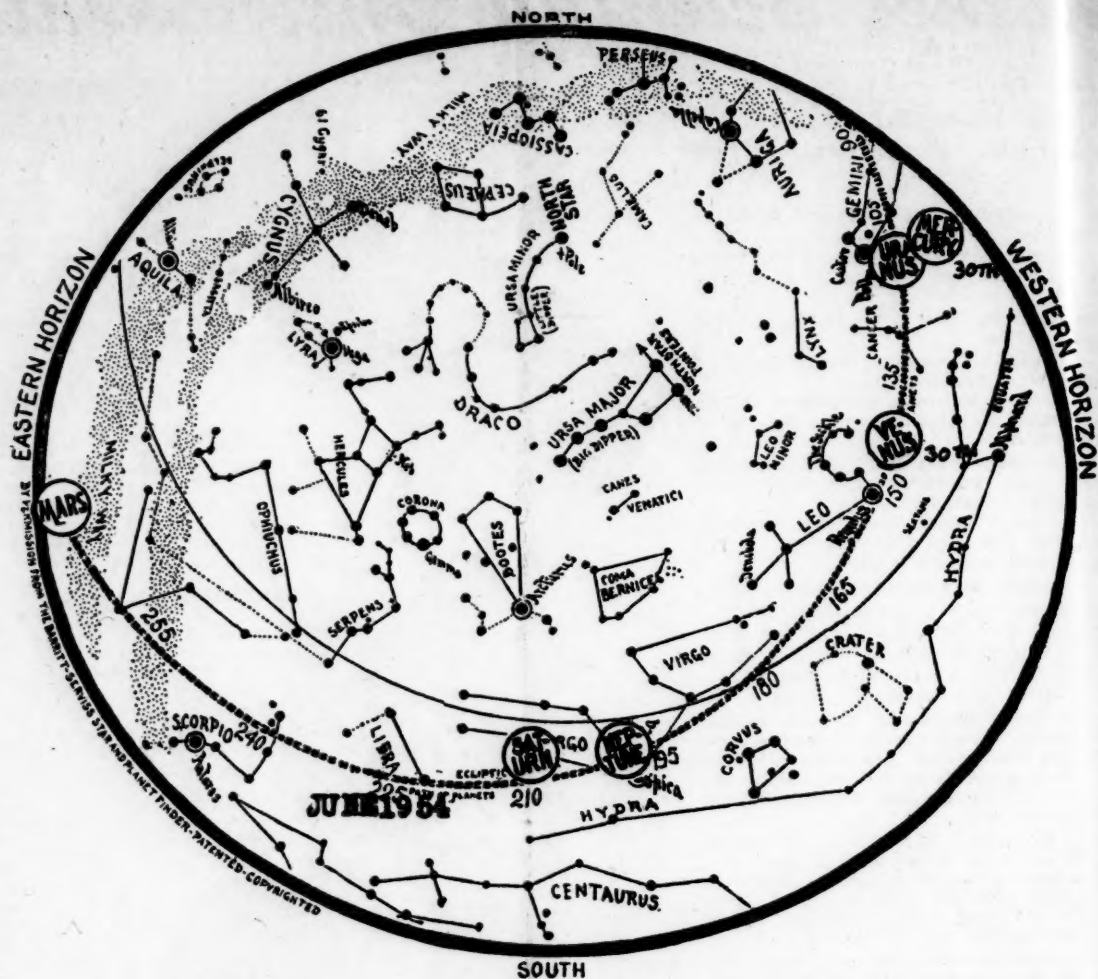
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Evening Sky Map For June

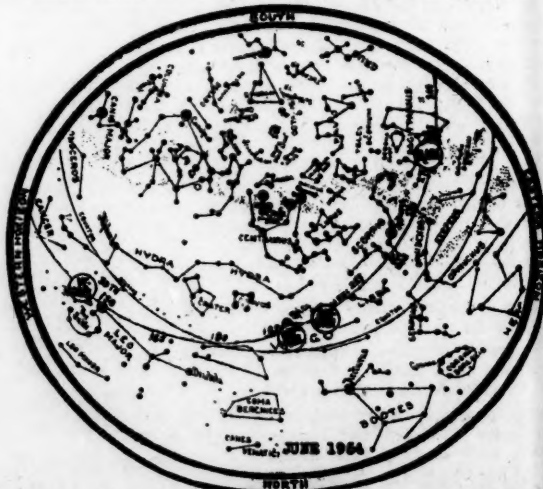


AT 9:00 P.M., JUNE 1: 8:00 P.M., JUNE 15: 7:00 P.M., JUNE 30

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EVENING SKY SOUTHERN HEMISPHERE

EVENING SKY SOUTHERN HEMISPHER :



At 9:00 P.M., May 1: 8:00 P.M., May 15: 7:00 P.M., May 31 At 9:00 P.M., June 1: 8:00 P.M., June 15: 7:00 P.M., June 30